

Appl. No. 10689517
Amdt. Date: December 19, 2006
Reply to Office action of: 3/21/05

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) An automated method for controlling a solids inventory in a continuous backwashing up flow sand filter system treating a liquid inflow having impurities therein, the method comprising the steps of: monitoring an inflow head pressure at an influent inlet; converting said head pressure to an equivalent communication signal input to a computer; ~~and controlling an air inflow rate in the an~~ air lift pump to maintain a target ratio range between a size of a captured solids inventory of the system and a size of a sand bed of the system; and establishing a set of optimal operation initial set points based on a quantity of polymer used, a normal air lift rate, and an expected inflow and outflow turbidity.
2. (cancelled)
3. (currently amended) The method of claim 2-1 further comprising the step of adjusting the air flow rate to maintain a selected effluent quality over a range of influent flow rates for a selected inflow quality.
4. (original) The method of claim 3 further comprising the step of controlling head pressure and influent flow rate in light of past operating data for optimal performance.
5. (cancelled)
6. (new) An automated continuous backwashing upflow sand filter system apparatus for treating a liquid inflow having impurities therein so as to control a solids inventory, the apparatus comprising: a sand filter having a sand bed filled tank with an inlet port receiving the liquid inflow and an outlet port discharging an effluent; a water level monitor positioned at the inlet port thereby sensing a water level in a vertical pipe rising from the inlet port; an air flow rate monitor and controller receiving a control signal directing a rate of air flow to a lift pump thereby maintaining a target ratio

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range between a size of a solids inventory and a size of a sand bed within the system apparatus.

7. (new) The apparatus of claim 6 further comprising a diagonally oriented duct portion and a vertically oriented duct portion extending concentrically about the vertical pipe.
8. (new) The apparatus of claim 7 further comprising radially oriented distribution arms extending from the vertical pipe within a lower portion of the sand bed.